

## CLAIMS

1. Method for detecting partial conductor short circuits (7) in a conductor (11) including plural mutually insulated partial conductors (5) in which the partial conductors (5) are connected together by a short circuit (3) at one or both ends of the conductor (11), wherein the propagation behavior of time-varying electrical signals is measured on the conductor to be investigated, the measured propagation behavior is compared with the propagation behavior of a reference conductor without partial conductor short circuits, and conclusions are drawn as to the presence of partial conductor short circuits from the changes in propagation behavior given by the comparison.

2. Method according to claim 1, wherein the complex reflection behavior is measured as the propagation behavior.

3. Method according to claim 2, wherein periodic, particularly sinusoidal, signals of a predetermined frequency are used as the signals changing with time, and in that the frequency is varied in a predetermined frequency range for measuring the reflection behavior, and the signals returning from the conductor (11) are received and are evaluated as regards their electrical parameters, particularly their amplitude.

4. Method according to claim 3, wherein the frequency is varied in the range of a few kHz to a few 100 MHz, in particular in the range of about 100 kHz to about 200 MHz.

5. Method according to claim 2, wherein as the time-varying signals, periodic or non-periodic signals of a predetermined signal form, particularly with rectangular or triangular form, are used, and wherein the signals coming back from the conductor (11) are received and are evaluated regarding their electrical parameters, particularly signal form.

6. Method according to one of claims 1-5, wherein the time-varying electrical signals are fed into an end of the conductor (11) provided with a short circuit (3); wherein an auxiliary conductor (4) is arranged parallel to the conductor (11) at a distance; and wherein the signals returning via the auxiliary conductor (4) are received and evaluated.

7. Device for performing the method according to claim 1, wherein the conductor (11) to be measured or the reference conductor and an auxiliary conductor (4) are arranged parallel and at a fixed distance to each other in a retaining device (9); wherein the conductor (11) or reference conductor is connected by one end by means of an input lead (2) to a signal source (1); and wherein the auxiliary conductor (4) is connected via a return lead (6) to a measuring device.

8. Device according to claim 7, wherein the signal source (1) and the measuring device are part of a network analyzer.

9. Device according to one of claims 7 or 8, where a signal separating filter (8) for matching the signal amplitudes of the fed-in and received signals is inserted between the input lead (2) to the conductor (11) and the return lead (6) from the auxiliary conductor (4).

10. Device according to one of claims 7-9, where in the auxiliary conductor (4) is an insulated copper conductor.

11. Use of the method according to claim 1 on a Roebel bar from the stator of an electrical machine.

12. Use of the method according to claim 1 on a conductor (11) in which the partial conductors (5) are electrically separated from one another at both ends of the conductor (11), wherein before the detection measurement a short circuit (3) is brought about at at least one of the two ends, and the detection measurement is then performed.